Vol. 114 No. 9 May 3, 1947

The American FERTILIZER

UNIVERSITY OF MINNESOTA RECD MAY 17 1947

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1850—1947

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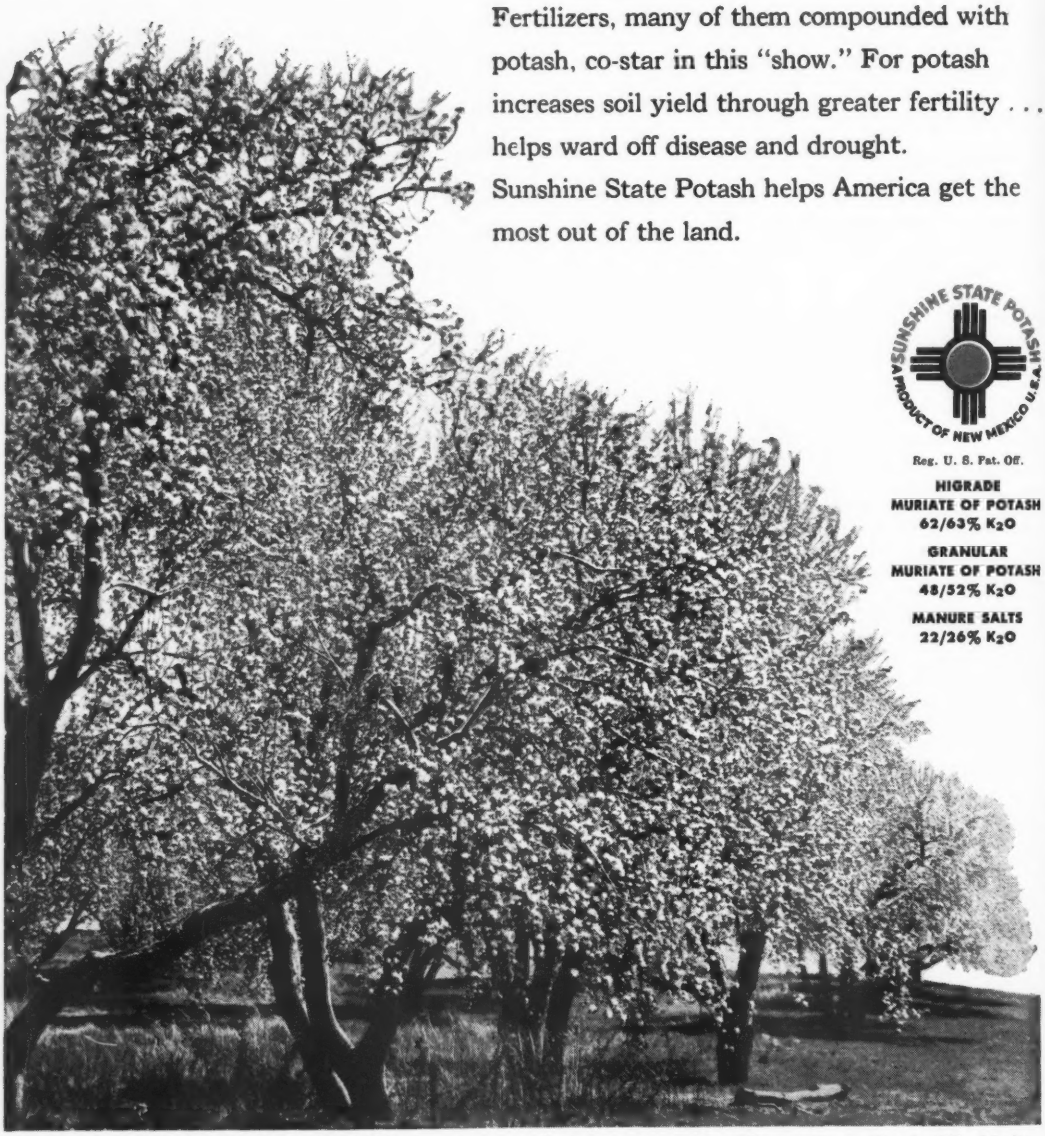

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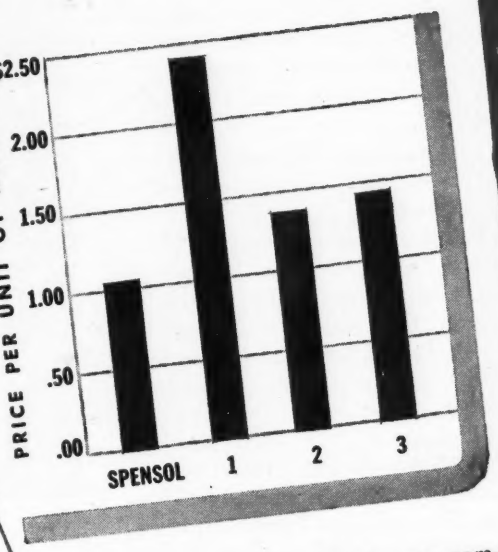

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The American FERTILIZER

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Fertilizer Practices for Profitable Tobacco*

By E. M. MATTHEWS

Virginia Bright Tobacco Station, Chatham, Virginia

THE value of research in improving Virginia's tobacco, a 73 million dollar cash crop in 1946, is beyond dispute. Many controllable factors contribute toward producing a highly successful and profitable tobacco crop, such as soil selection and managment, varieties, fertilizer practices, spacing, topping, disease and insect control, harvesting, and marketing. However, on fields with typical tobacco soils no one factor plays quite so important a part as the fertilizer practice. Normal treatments in plant-food applications produce, at present, crop values varying widely even on the same fields and during the same season, often as much as $150 or more per acre.

Variations in fertilizer practices which produce such widely varying acre returns are of vital importance to thousands of Virginia tobacco farmers. If used by 20,000 or that half of Virginia tobacco growers who are below even the general average in acre values realized for their crops, such practice changes last year would have added an extra 11 million dollars to the income of half of our tobacco farmers.

The purpose of this article is to describe briefly these important practices, and the research projects from which they are derived.

In a rather comprehensive fertilizer experiment conducted on the Chatham Station for eight years, unfertilized flue-cured tobacco grown on the best soils produced less than $100 per acre (at present tobacco prices), while well-fertilized tobacco in 1945 and 1946 on the same field produced average values for eight replicate plots varying for different treatments from $679 to $789 per acre (see table). Duplicate plot treatments produced 2-year average values varying from $640 per acre for tobacco which received 900 pounds of 3–9–6 fertilizer per acre, not mixed in the soil before listing, not side-dressed, and spaced 24 inches in rows 4 feet apart, to $819 per acre for tobacco which received 1,200 pounds of 3–9–6 fertilizer thoroughly mixed in the furrow row with a 10-inch-shoe, single shovel plow before listing, side-dressed 20 days after planting with 100 pounds per acre of 8–0–16 side-dresser containing 2½ pounds of borax, and spaced 20 inches apart in 4-foot rows.

The project from which the above results were obtained was designed to determine: (1) the optimum rates of the best recommended fertilizer; (2) the effect on yield and quality of tobacco from several different side-dressing analyses; (3) the effect on yield and quality of spacing closer than recommended in the past or practiced by most farmers; and (4) the effect on stand, yield, and acre value of mixing heavy applications of fertilizer thoroughly in the furrow row before listing.

The purpose of this test, in general, was to gain information which would enable this

* Reprinted from "Better Crops with Plant Food" April, 1947.

Station to give sound advice to flue-cured tobacco farmers of Virginia as to the best practical fertilizer practices for obtaining maximum acre yields of good quality cigarette tobacco. Past projects on this Station, although they had answered certain phases of this question, had not been so designed as to fully satisfy the present demand for knowledge on how to produce larger yields of quality tobacco on fewer acres.

Procedure

Fifty-six 1/40-acre plots were required. Granville sandy loam soil type was used. A standard 3–9–6 fertilizer was applied at rates varying from 900 to 1,500 pounds per acre in the furrow before listing the land previous to transplanting. Side-dressings varied as shown in the following table. Seven different fertilizer treatments were used, first with the plants spaced 24 inches in rows 4 feet apart and then repeated with 20-inch spacing. All treatments were repeated four times with randomized arrangement in each replicate. In two replicates of each spacing the fertilizer was thoroughly mixed with a single shovel plow in all plots before listing, while with the other replicates all plots were listed without mixing the fertilizer.

Records of replants necessary, acre yields, and values were made in the usual manner practiced on this Station. Summaries of these are given in the following table.

Discussion of Results

Although this experiment has been conducted in its present form for only two seasons, the results which concur so closely with those obtained from several similar experiments conducted on the Chatham Station during the past 12 years are so consistent throughout the several replications that conclusions seem fairly safe.

The two-year summary of results for the 56 plots as given in the table shows eight replicate average acre values of $679.25 when 900 pounds of 3–9–6 fertilizer are used and $788.53 (or $109 increased value) when1,200 pounds of the same fertilizer are used before transplanting and 100 pounds of 8–0–16, with 2½ pounds of borax added, are used as a

(Continued on page 28)

TABLE I

RATES OF FERTILIZER, SIDE-DRESSING, METHOD AND SPACING TEST, CHATHAM
1945–1946—Average
(Fertilizer and Yields per Acre)

Treatment No.	Fertilizer: At planting (pounds per acre)	Fertilizer: Side-dressed 20 days (pounds per acre)	Four-plot average Spaced 24" Lbs.	Four-plot average Spaced 24" Value	Four-plot average Spaced 20" Lbs.	Four-plot average Spaced 20" Value	Eight replicate plot average Lbs.	Eight replicate plot average Value
1	900 3–9–6	None	1,245	$663.53	1,317	$694.98	1,281	$697.25
2	1,200 3–9–6	None	1,453	767.24	1,480	784.12	1,467	775.68
3	1,500 3–9–6	None	1,485	772.28	1,525	782.84	1,505	777.57
4	900 3–9–6	100 8–0–16+B*	1,421	751.32	1,510	806.21	1,465	778.77
5	900 3–9–6	100 10–0–10+B	1,433	754.41	1,467	781.25	1,450	767.70
6	900 3–9–6	100 5–5–20 (com.**)	1,383	725.60	1,477	780.06	1,430	752.84
7	1,200 3–9–6	100 8–10–16+B	1,416	764.65	1,553	812.41	1,509	788.53
7 Treatment averages			1,405	$742.68	1,495	$777.41		
Average value c per pound				52.8		52.5		

*2½ lbs. borax per acre when used.
**Commercial, no borax mentioned on tag or bag.

Treatment No.	Fertilizer: At planting (pounds per acre)	Fertilizer: Side-dressed 20 days (pounds per acre)	Four-plot average fert. mixed before listing Lbs.	Four-plot average fert. mixed before listing Value	Four-plot average not mixed before listing Lbs.	Four-plot average not mixed before listing Value	Per acre loss	Replants per acre Mixed	Replants per acre Not mixed	% Stand at harvest Mixed	% Stand at harvest Not mixed
1	900 3–9–6	None	1,341	$706.53	1,221	$652.10	$54–	325	596	98	98
2	1,200 3–9–6	None	1,486	784.63	1,448	766.74	18–	503	870	97	97
3	1,500 3–9–6	None	1,559	801.14	1,452	754.01	47–	740	860	96	95
4	900 3–9–6	100 8–0–16+B	1,493	784.33	1,437	772.87	12–	350	630	98	98
5	900 3–9–6	100 10–0–10+B	1,470	770.55	1,429	763.85	7–	320	690	98	98
6	900 3–9–6	100 5–5–20 (com)	1,483	764.91	1,376	740.77	24–	280	490	98	99
7	1,200 3–9–6	100 8–0–16+B	1,544	797.24	1,476	779.82	18–	470	840	99	98
7 Treatment averages			1,482	$772.76	1,406	$747.17					

Woods Elected President of Wilson and Toomer Fertilizer Co.

J. Albert Woods of New York City was elected President and Director of Wilson & Toomer Fertilizer Company at a meeting of the Board of Directors held on April 22nd. His election became effective on May 1st, and he took up his new duties on that date. Mr. Woods succeeds the late Bayless W. Haynes, who for many years was the President of Wilson & Toomer and active in the business and civic life of Jacksonville and Florida.

J. Albert Woods

Wilson & Toomer Fertilizer Company, whose general offices are located at 772 West Bay Street, is one of Florida's leading industrial concerns. Established in 1893, the Company manufactures sulphuric acid, superphosphate, mixed fertilizers and handles many other fertilizer materials. Its subsidiary companies, the Florida Agricultural Supply Company and the Southern States Bag Company, manufacture a complete line of agricultural insecticides and burlap and cotton bags. Plants, warehouses and docks of the parent company and subsidiaries are located in Jacksonville and service facilities are located in many other areas of Florida.

Mr. Woods was born in Shelbyville, Tennessee and educated at the Webb School of Bell Buckle, Tennessee and the University of the South, Sewanee, Tennessee. Following service in France with the U. S. Marine Corps during World War I, he resumed work with the Armour Fertilizer Works, serving as Salesman, Assistant Manager and Division Manager and going to Chicago in 1929 to become its Vice-President in charge of sales. He remained with Armour Fertilizer Works until 1934 when he was elected Vice-President and Director of the Chilean Nitrate Sales Corporation of New York. He served as President and Director of the Chilean Nitrate Sales Corporation and its subsidiaries from 1939 until the latter part of 1945.

In January, 1946, Mr. Woods became Vice-President of W. R. Grace & Company of New York, which position he resigned to take up the new work with the Wilson & Toomer Fertilizer Company.

Mr. Woods was one of the organizers of the American Plant Food Council, Inc., of Washington, serving as one of its Directors and a member of its first Executive Committee.

He has been a Director of Eastern Air Lines, Inc., and Pan American Grace Airways, and is a Trustee and a Regent of the University of the South at Sewanee, Tennessee. He is President of its Associated Alumni and Chairman of the Finance Committee of the Board of Regents. He is a member of Blind Brook, Pelham Country, Links, Indian House and Huguenot Yacht Clubs of New York and the Metropolitan Club of Washington, D. C.

Regarding his election Mr. Woods said, "I am happy to be returning to the South and to Florida, with whose business interests I have been closely associated for many years. The Wilson & Toomer Company has long held my admiration and respect as one of the leading units in the fertilizer and chemical industry. I knew Mr. Lorenzo Wilson, one of its founders and its first president, and Mr. Bayless Haynes was one of my closest friends for twenty-five years. Both men were progressive leaders in our industry. The executive officers and the personnel of the company are well known to me and it will be our common purpose to keep our company in the first rank with those who serve the progressive agricultural and business interests of our country."

Fertilizer Exports and Imports, 1946

Exports Rise

Exports of fertilizers and fertilizer materials from the United States in 1946 amounted to 1,264,000 short tons, valued at $22,379,000, according to a summary prepared by The National Fertilizer Association from basic statistics compiled by the U. S. Department of Commerce. The increase over 1945 was 23 per cent in both tonnage and value. Exports of nitrogenous materials showed a substantial increase over 1945. Exports of Florida phosphate rock, normal superphosphate and concentrated superphosphate were greater than in 1945. ,Exports of potash materials, on the other hand, were lower than in the previous year.

Total export tonnage in 1946 was the largest for any year since 1941, and the aggregate value of 1946 exports was the largest for any year in the 25 year period for which comparable figures are available. The relatively high value in relation to tonnage was due in part, of course, to higher prices. It was also due in part to a shift in the types of materials exported, from low-cost-per-ton materials to those with a higher value per ton. Phosphate rock, for instance, made up 72 per cent of total exports in 1941 but only 56 per cent in 1946. Superphosphate accounte for 10 per cent of total exports in 1941 and 21 per cent in 1946. The direction of post-war trade is different from that of the pre-war period. During the war, of course, many countries were shut off from trade, so the exporters found new markets, particularly in the Western Hemisphere. In 1939 exports to the Western Hemisphere totaled 22 per cent of all exports while in 1946 they amounted to 54 per cent.

Shipments of fertilizers and fertilizer materials by UNRRA during 1946 totaled 122,000 short tons, valued at $3,072,000. Such shipments in 1946 were 66 per cent greater than in 1945, reflecting larger shipments of superphosphate.

Shipments under the lend-lease program reflected the termination of World War II and dwindled to only 10 per cent of the amount exported in 1945. Most of the lend-lease shipments went to Europe; but China and New Zealand together received 35 per cent of the total.

Imports Show Decline

Imports of fertilizers and fertilizer materials during 1946 were lower than in 1945. The total of 1,272,000 short tons for 1946 was 24 per cent lower than in the previous year, while the value of $37,684,000 was 13 per cent below 1945.

Sodium nitrate imports were 320,000 tons less than in 1945, a decrease of 38 per cent, and lower than imports in any of the war years. Imports of ammonium sulphate, as well as the group "all other phosphates," were considerably lower than in 1945 and many of the other items, which are not imported in large quantities, showed declines. Calcium cyanamide, however, was imported in substantially greater quantity than in 1945, reaching a new high point.

EXPORTS AND IMPORTS OF FERTILIZERS AND FERTILIZER MATERIALS

In Short Tons

	Calendar Year		
Exports	1946	1945	1944
Ammonium sulphate	25,257	20,753	10,614
Sodium nitrate	16,185	12,229	11,435
Other nitrogenous chemicals	117,378	85,069	11,689
Nitrogenous organic waste	6,976	6,168	5,877
Total Nitrogenous Materials	165,796	124,219	39,615
Florida: High grade hard rock	116,649	80,020	26,186
Land pebble rock	379,711	303,502	260,281
Other rock	1,026	11,584	1,410
Tenn., Idaho & Mont. rock	211,953	153,603	204,076
Total Phosphate Rock	709,339	548,709	491,953
Normal superphosphate	167,376	134,830	205,922
Concentrated superphosphate	102,932	72,326	
Other phosphate materials	1,139	1,939	611
Total Phosphate Materials	271,447	757,804	698,486
Muriate of potash	78,257	85,343	86,933
Other potash	18,565	19,344	23,125
Total Potash Materials	96,822	104,687	110,057
Concentrated chem. fertilizers	3,765	952	1,260
Prepared fertilizer mixtures	16,399	35,321	27,406
Grand Total	1,263,568	1,022,983	876,824
Imports			
Ammonium sulphate	101,558	118,890	103,628
Ammonium nitrate mixtures	1,105	655	317
Calcium cyanamid	163,093	141,057	101,886
Calcium nitrate	3,300	0	5
Guano	589	3,094	4,889
Dried blood	483	2,755	17,664
Sodium nitrate	529,677	849,888	712,434
Ammonium phosphates	91,113	92,757	91,943
Tankage	5,227	10,541	12,536
Castor bean pomace	322	357	60
Fish scrap and meal	1,248	847	869
Other nitrogenous materials	142,213	140,105	115,071
Total Nitrogenous Materials	1,039,928	1,360,946	1,161,302
Bone phosphates	55,284	55,397	66,256
Normal superphosphate	2,754	1,905	1,357
Concentrated superphosphate	40	80	6
All other phosphates	66,908	158,657	138,224
Total Phosphate Materials	124,986	216,039	205,843
Muriate of potash	3,452	6,861	4,332
Other potash materials	4,924	24	9,420
Total Potash Materials	8,376	6,885	13,752
Other fertilizers	98,534	80,928	67,453
Grand Total	1,271,824	1,664,798	1,448,350

* Export statistics includes lend-lease and UNRRA shipments.

New Potash Prices Announced for 1947-1948

Two of the potash producing companies have announced prices for the 1947–1948 fertilizer season. The base prices for muriate of potash is 37.5 cents per unit K_2O, f.o.b. sellers plant, in bulk, carload lots. Manure salts are priced at 20 cents per unit K_2O. On seasonal contracts with monthly deliveries from June, 1947 to March, 1948, inclusive, a discount of 8 per cent is allowed, with an additional 4 per cent upon acceptance of delivery of entire tonnage by March 31, 1948. On orders for monthly delivery from October, 1947 to March, 1948 inclusive, the discount is 4 per cent, with an additional 2 per cent upon acceptance of delivery of entire tonnage by March 31, 1948.

The present price for spot orders of muriate of potash, when available, is 40 cents per unit K_2O, f.o.b. producing point.

The new price schedules eliminate the delivered price ex-vessel at Atlantic and Gulf ports, which has been the usual form of quotation in previous years.

Fertilizer Industry Equipped To Meet Emergencies

Clifton A. Woodrum, president of the American Plant Food Council, reports that official Government records, showing February normal superphosphate production to be the highest in five years, "is tangible evidence that the fertilizer industry's expansion program is designed to meet the plant food needs of agriculture in the future as they have been so abundantly met in all normal periods."

"February production of both normal and concentrated superphosphate, essential plant foods, is more than 10 per cent above the same month last year," Woodrum said, announcing that "further increases are anticipated by the industry as rapidly as building materials, transportation and machinery become available to meet the expansion requirements." He added that "construction controls have added to the difficulties encountered by the fertilizer industry in expanding production of superphosphate."

Speaking for the fertilizer industry, he said that "the present unprecedented demands for plant food present an entirely new experience for manufacturers, most of whom had pre-war plant capacities about 50 per cent greater than needed to furnish the fertilizer and materials that farmers would purchase."

The Bureau of the Census in an official report issued this week said that "normal superphosphate production in February was the highest recorded for that month in the last five years and exceeded the previous high, February 1946, by 12 per cent" and that "February production of concentrated superphosphate despite the short working month was 13 per cent over January and 11 per cent over February of last year."

Woodrum said that "the greatest expansion of superphosphate production capacity is being realized in the midwest where the demand for fertilizer has been abnormally great."

Lion Oil Completing New Nitrogen Units

The Lion Oil Company has announced the completion of a new ammonium nitrate pelleting plant at their chemical works in El Dorado, Arkansas. The new plant, which will begin production in May, will have a capacity of about 15,000 tons per month of grained ammonium nitrate for fertilizer. The new facilities include neutralizers, vacuum distillation units, two 80-foot "shot towers"; also cooling, drying and conditioning units, and bagging facilities.

The company is also building a new nitric acid plant consisting principally of three 45-ton-per-day capacity ammonia oxidation units. This new construction will increase their nitric acid production by about 50 per cent, bringing the output to about 9,000 tons per month of ammonium nitrate solutions having a 40-per cent nitrogen content. The new plant is scheduled to begin operation in August.

Additional storage facilities for ammonium nitrate and for nitrogen solutions are also being constructed.

At the annual meeting of the company on April 8th, the following officers were elected: T. H. Barton, president; T. M. Martin, executive vice-president; A. F. Reed, vice-president; J. E. Howell, vice-president; R. E. Meinert, vice-president; C. N. Barton, vice-president; E. W. Atkinson, Treasurer; Jeff Davis, secretary; E. P. Marrable, assistant secretary and assistant treasurer. B. L. Allen, assistant secretary.

In addition to its recently developed chemical department, the Lion Oil Company is one of the leading producers of gasoline, motor oils and asphalt products, which are marketed throughout the Central-Southern States by more than 1,300 dealers.

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Principal Articles in This Issue

PAGE

FERTILIZER PRACTICES FOR PROFITABLE TOBACCO, *by E. M. Matthews* 7
Woods Elected President of Wilson & Toomer Fertilizer Co. 9
Fertilizer Exports and Imports, 1946.... 10
New Potash Prices Announced for 1947–1948 11
Lion Oil Completing New Nitrogen Units 11
New Slow-Action Nitrogen Fertilizer Demonstrated 12
Improvement Expected in Potash Supply *by Horace M. Albright* 14
FERTILIZER MATERIALS MARKET
New York 15
Charleston 16
Philadelphia 16
Chicago 17
House Committee Shelves Flannagan Bill 18
February Superphosphate Figures 20
World Corn Crop at Record Level 24
Corn Fertilizer for Georgia 24
Pasture Renovation Pays in Cooperative Experiments 26
Pen Yields Increased by Added Nitrogen 30

New Slow-action Nitogen Fertilzer Demonstrated

A slow-acting nitrogen fertilizer that feeds crops over a long growing period has been developed by soil scientists of the U. S. Department of Agriculture. The fertilizer is one of a series of combinations of urea and formaldehyde known as Uraform. It is produced at present only on a laboratory scale. Results of laboratory and greenhouse tests with the material were demonstrated by Dr. K. G. Clark, Jew Yam Yee, and Dr. M. S. Anderson at a Soil and Fertilizer Conference held at Plant Industry Station, Beltsville, Md., on April 9th

The conference was attended by approximately 50 representatives of the fertilizer industry. They included members of the Fertilizer Industry Advisory Committee and staff and directors of the National Fertilizer Association, the American Plant Food Council, the American Potash Institute, and the Phosphate Research Committee

The results indicate that Uraform is superior to natural organics in supplying nitrogen at a uniform rate over a long growing period. Unlike nitrogen fertilizers now used, Uraform does not leach out of the soil easily. It offers promise as a source of nitrogen for corn, potatoes, and tobacco—crops which ordinarily need additional fertilizer after they have been planted. Applications of Uraform at planting time would save labor. Its delayed action and long duration would also make Uraform a valuable fertilizer for lawns and other grasses. The tests show that Uraform may be used in mixed fertilizer as well as in separate applications. Because it does not appear to be affected by moisture absorption, Uraform offers possibilities as a conditioner that prevents caking, which is often a serious problem in mixed fertilizers. Unfortunately both urea and formaldehyde are in short supply at this time. As a result, production of Uraform fertilizer must wait until more of these chemicals are available.

The discussion of Uraform was one of the highlights in the day's conference in which representatives of the fertilizer industry were given a report of the work now in progress in the Soils and Fertilizer Division. Dr. F. W. Parker, chief of the Division, presided.

High corn yields produced in field experiments and farm demonstrations in the Southeast during the past three years are the result of three factors, Dr. B. A. Krantz told the conference. The factors are the introduction of adapted varieties of hybrid corn, heavy

increases in nitrates, and closer spacing of plants in the field

Settlers who move into the newly irrigated regions of the Lower Colorado and Columbia Basin projects will have the advantage over most pioneers in irrigated lands in that many of their soil problems will already have been studied through an arrangement with the U. S. Department of Interior. Describing field tests in soil fertility, salinity and cropping practices, Dr. W. V. Bartholomew pointed out that this is probably the first time that research has attempted to solve soil problems before the people move on the land.

Cheap Land Makes Record Tobacco Yield

In the hands of a World War II veteran, Barren County (Kentucky) land that cost $4 an acre a few years ago, in 1946 produced tobacco that sold for $1,230 an acre. It was a new production record for Barren county, according to County Agent J. O. Horning, who told the following story:

'Edwin Jones, a young farmer, got out of the Amy in April, 1946, and returned to the 63-acre farm owned by his widowed mother. He picked out three pieces of land on which to set his two-acre tobacco allotment. One piece would have produced about 45 bushels of corn to the acre, it was estimated, and the other two pieces 20 to 25 bushels.

"Jones applied 7,000 pounds of mixed fertilizers, 400 pounds of ammonium nitrate and 600 pounds of nitrate of soda to the two acres.

"The crop totaled 6,462 pounds of tobacco which sold for $2,460 above floor expenses. The fertilizer cost about $75 an acre. The variety of tobacco was Ky. 16."

St. Regis Reports Increased Sales

Sales and earnings of the St. Regis Paper Company (New York) and subsidiaries for the first quarter this year set new records for the period, reflecting in large part the results of the company's long-range development and expansion program, Roy K. Ferguson, president, revealed at the annual meeting on April 11th.

For the first three months of 1947 net income after taxes amounted to $3,698,826, as compared with $1,004,566 for the corresponding 1946 period. The company reported a record total of $5,563,604 for all of 1946.

Net sales in the initial quarter this year totaled $32,938,299, about doubling the volume of $16,584,149 reported a year earlier. For the first quarter of this year 42 per cent more multiwall paper bags were manufactured than a year ago; tonnage of printing, publication and converting papers, kraft paper, and pulp produced showed an increase of 155 per cent, while Panelyte tonnage rose 45 per cent.

"The extensive development and expansion program started about two years ago, and which involved the company's pulp, paper, bag and plastic production and converting facilities, is nearing completion," Mr. Ferguson informed stockholders.

"The new 75,000-ton multi-wall kraft mill and bag factory now under construction at Pensacola by Alabama Pulp and Paper Company in which St. Regis has an interest, is proceeding according to schedule and is expected to be in production by December, 1947."

H. D. Ruhm Honored on Anniversary

At the luncheon of the Columbia (Tennessee) Rotary Club, Herman D. Ruhm, vice-president and founder of the Ruhm Phosphate and Chemical Company, was presented with a handsome plaque by his fellow workers in the Company, commemorating his 50 years service with the company. Mr. Ruhm, with his brother, the late John Ruhm, organized the company in 1897, and today it is the the world's largest producer of ground phosphate rock for direct application to the soil. The luncheon was attended by Oliver M. Babcock, Jr., president of the company, and by many of the state sales representatives.

In commenting on this well-deserved tribute, the *Columbia Herald* stated:

"Mr. Ruhm, although not quite so active as in his earlier days, is every bit as enthusiastic and as forward-looking as he ever was, preferring, after a half century and more of service in the phosphate industry, to look ahead rather than to look back.

"His has been a distinguished career, working on a phase of the phosphate industry that has never had a real break, and it was a heartfelt tribute that was paid to him here yesteday, one in which thousands of friends not directly connected either with his company or with the Rotary Club are glad to add the weight of their appreciation of his services and his personality."

Improvement Expected in Potash Supply

By HORACE M. ALBRIGHT
President, United States Potash Company

WHILE potash shortages still exist in most sections of the United States, full shipments and a supply-demand balance can be forecast during the coming fertilizer year.

Four principal factors that account for a generally more optimistic outlook for the year beginning July 1 are:

1. The five leading potash companies reached a new peak output of 923,127 tons during 1946. The figure is 54,941 tons or 6.3 per cent higher than the preceding year and continues an unbroken record of increasing deliveries that has been the keystone of the industry for more than a decade.

2. Improvement in plants and processes, further mechanization of mining operations and an ambitious program of expansion in the industry foretell of even greater production during 1947.

3. Revival of the foreign potash industry, which during the pre-war years supplied approximately 50 per cent of United States needs, has progressed more rapidly than early predictions. This is particularly true in France where production approximates the level reached immediately prior to World War II.

4. The Government has revised its prospecting regulations, increasing the amount of land which can be explored by private companies from 15,360 to 40,960 acres, a gain of 25,600 acres.

The last factor perhaps is most significant since it will mean that private enterprise can once more enter the search for new ore bodies. Over the long-term period, the revised regulations should bring a substantial gain in potash production.

On the darker side of the picture, however, shortages of building materials and plant equipment, particularly machinery facilities, has delayed expansion programs of most leading companies. This condition can be expected to exist throughout 1947.

The labor supply in New Mexico has also been inadequate for other than normal maintenance and production operations.

Foreign Production

With the announcement that France would ship 16,5000 tons of K_2O potash to the United States during the spring months, it would appear that foreign production is beginning to make progress.

Need for the essential plant food in European countries plus commitments to Japan and other Oriental countries leaves but slight surplus for export, however.

Plant output is still below pre-war capacity in some countries because of shortages of labor, equipment and materials form achinery repair.

In Spain, production is reported somewhat higher than during the years immediately prior to its civil war. Palestine production in 1945 was slightly lower than the previous year and reports have been received that the output of the Dead Sea plant has been temporarily suspended due to political conditions. Political conditions in that country would tend to decrease production, some observers believe.

Reports indicate Russia has restored damaged Polish mines which lie inside the Polish-White Russian border.

Germany, however, which was always the largest foreign potash producer, has not approached its pre-war rate of production. Limited production is reported in the British zone, a portion of which has been shipped via the American zone to Japan.

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FERTILIZER MATERIALS MARKET

NEW YORK

New Potash Prices for Next Season Announced. Prices Quoted f.o.b. Producing Points. Demand for Mixed Fertilizers and Top Dressing Still at Peak. Export Inquiries Not Being Filled. Feed Material Market Quiet But Prices Remain at High Levels

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, April 18, 1947.

The only item of unusual interest in the fertilizer trade this past period has been announcements of new price schedules for the coming fertilizer year by two of the major potash producers. Both of the companies in question are quoting muriate at 37½c per unit K_2O, f.o.b. cars, producing point, with the usual discount terms to prevail as in the past. The port price on potash has been eliminated entirely in both cases. It is problematical as to what the remaining potash producers will do with regard to their new schedules.

Demand continues high and supplies remain short for all basic fertilizer ingredients with no easing of the situation expected before the end of the current fertilizer season. Call for top dressing material is excessive and far beyond available supplies, in spite of government efforts to expedite imports of sodium nitrate from Chile. Interest from South America and other foreign markets is very active, but very little business has actually been accomplished, due to the tight supply situation here and the difficulty in obtaining necessary export licenses.

SuLphate of Ammonia

Production is at good level and shipments to fertilizer manufacturers have been more frequent recently. No further reductions in contracts are anticipated, but very few fertilizer mixers will receive as much as they are committed for. The recent settlement of labor problems in the steel industry lends a feeling of optimism for the period which will commence July forward.

Nitrate of Soda

Everything possible is being done to speed shipments from Chile, but it does not appear that enough supplies from that source will arrive in this market to take care of spring demand. Domestic production shows no sign of improvement, and the market is extremely tight.

Organic Materials

This market remains very quiet as buyers show little interest at prevailing prices. Tankage is available at $8.75 per unit of ammonia ($10.63 per unit N) and dried blood is nominal at $9.00 ($10.94 per unit N), but lack of buying even by the feed trade makes it difficult to establish a true value on these items. On the other hand, bone meal shows firmness with available supplies contracted at $65 per ton, f.o.b. producing point.

Superphosphate

Current market shows no deviation from the tight position prevailing over recent months. Production continues at record levels but remains short of filling demand. Concentrated superphosphate is also being produced in record amounts, but only a small fraction of the demand from all sections of the country can be satisfied.

Phosphate Rock

There is still an active demand both for domestic use and export shipment. No stocks are accumulating. Mining companies report production facilities are being steadily increased.

Potash

Aside from the new prices announced, there is no change in this market. Demand continues to exceed production, and the entrance of foreign potash to this market has not been in sufficient amounts to ease the supply position. Shipping schedules from the mines to mixers are being maintained, in spite of freight car shortages in some areas.

CHARLESTON

End of Season Finds All Material in Short Supply but with Demand Continuing. Some Increases in Phosphate Rock Prices.

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, April 30, 1947.

All prime ingredients remain short of demand. Production of basic ingredient, superphosphate, for the year 1946–1947 reached a new high and would have been higher but for bottlenecks such as car shortage for delivery of rock and sulphuric acid. Some manufacturers are worried about the outlook on mineral nitrogen as demand for next season is expected to be high and some producers of nitrogen complain of decreased efficiency of their facilities, due to deterioration.

Mixed fertilizer deliveries have fallen off in volume as the season nears its end. Exceptionally large deliveries earlier in the season cause the present period to appear smaller in volume compared to last season, but total deliveries for the entire season are greater than last season's figures.

Organics.—Interest in organics continues to remain slack. Even feed buyers have shown less interest, resulting in dried ground blood dropping off to a price of $7.25 to $7.00 ($8.51 to $8.81 per unit N) f.o.b. Chicago. Little, if any, European organics are available. South American views of price are out of line with the U. S. market and buyers do not like to buy for future shipment under present price conditions. A little domestic nitrogenous is offered for May/June at $4.75 per unit ammonia ($5.77 per unit N), f.o.b. midwestern production point.

Castor Pomace—Demand is fairly active for June forward shipment, but little, if any, is offered.

Hoof Meal.—Some hoof and horn meal was offered recently from South America at $8.30 ($10.09 per unit N), c.i.f. Atlantic ports, but little buyers' interest was shown.

Blood.—Price is around $7.00 to $7.25 ($8.51 to $8.81 per unit N), with little buying interest shown.

Tankage.—Market is around $7.25 ($8.81 per unit N) at Chicago and interest is rather slack.

Nitrate of Soda.—Demand is exceedingly strong and supply entirely inadequate. Chilean deliveries are still delayed too much for maximum good to farmers. Domestic production continues limited by soda ash shortage. Prices remain unchanged.

Sulphate of Ammonia.—Production for February was slightly up, but market is still tight with demand far exceeding supply. Some producers, it is reported, have been having decreased output because of deteriorated production facilities and their anticipated production for the coming season is expected to be less than this year.

Ammonium Nitrate.—Demand far exceeds supply and prices are firm at the same levels. February output fell slightly below January.

Nitrogen Solutions.—Demand remains strong even though many fertilizer manufacturers are winding up their season's operations. Breakdowns at some production points have further hampered deliveries.

Potash.—Spot material is snapped up as offered and all manufacturers complain of inadequate supplies.

Superphosphate.—This article continues very tight in supply. Several recent increases in the cost of phosphate rock may be reflected in higher prices next season. Demand continues to exceed supply, even though the end of the fertilizer season approaches in most states.

Phosphate Rock.—Market is tight and demand strong. Shortage of cars continues to hamper deliveries. Several increases in cost of labor and fuel oil recently have raised the price of rock to acidulators.

PHILADELPHIA

Approach of Mixing Season End Brings No Let-up in Material Demand. Feed Market Not Interested at Present Organic Prices

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, April 28, 1947.

The end of the active fertilizer season is about here, but the demand continues for fertilizer chemicals at prices much above normal. The supply is not equal to the demand. On the other hand, organics are receiving scant attention from buyers.

Sulphate of Ammonia.—Shipments are improving but not sufficiently to supply the demand, which is very active at higher prices. It is expected that the recent understanding between the steel men and their workers will insure an increased and steady supply of this material in the future.

Nitrate of Soda.—Requests for this article continue in excess of the available supply, and while shipments from Chile are moving with fair regularity, it seems certain there will not be sufficient arriving for use this season.

Castor Pomace.—Certain grades of this article are offering freely, with no interest on

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the part of buyers; that is, except at abnormally low figures.

Blood, Bone, Tankage.—Any market recently in these organics has been almost entirely nominal. There is a fair supply available with practically no buying interest on the part of either the feed trade or fertilizer mixers. However, some sales have been reported at prices far below recent quotations, and buyers pay no attention to requests for bids.

Phosphate Rock.—The demand continues in excess of the capacity to produce.

Superphosphate.—Even though the season is nearing the usual closing time, the demand still continues for this material.

Potash.—Several of the major producers in the United States have published new prices for the season May 31, 1947 to June 1, 1948, and these are f.o.b. sellers' works. The present supply continues inadequate and the spot demand remains unsatisfied.

CHICAGO

Some Nitrogenous Tankage Sold for Future Delivery. Feed Material Prices Lower

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, April 26, 1947.

It has again developed that in certain sections considerable tonnage of nitrogenous has been booked for early deliveries, whereas in other sections buyers refuse to consider purchasing at this early stage. In sellers' opinions, the national wage pattern that is being established at present, will not make for lower prices.

There has been a further decline in the price of feed materials which is not unusual at this period, but, of course, still too high for use in commercial fertilizer.

House Committee Shelves Flannagan Bill

The Flannagan fertilizer bill (H. R. 2494) to put the government into the fertilizer production and distribution business has been pigeonholed for the remainder of this session by Chairman Clifford Hope, of Kansas, of the House Agricultural Committee, who has announced that no major legislation affecting agriculture would be considered by his committee until next year.

The fertilizer bill, introduced in March by Representative John W. Flannagan, of Virginia, at the behest of the American Farm Bureau Federation, has been forwarded to the Department of Agriculture as a matter of course by the commitee for comments of

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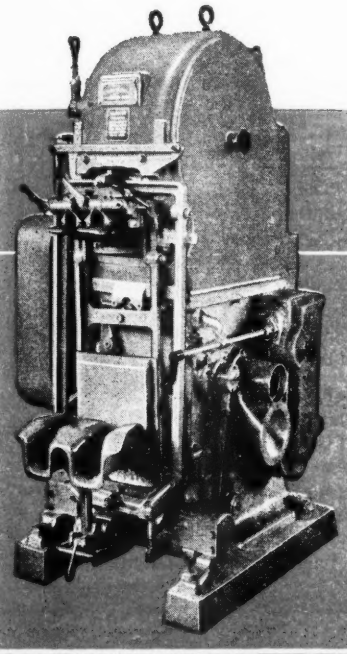

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Secretary Clinton Anderson, but no pressure is being brought by the committee for an early report. It is believed generally in the trade that the secretary is opposed to the bill, but there has been nothing official from the department on this score.

It was announced by Representative Hope that it was the intention of his committee to conduct an exhaustive study of the whole range of agricultural problems, before attempting any piecemeal legislative remedies. The study got underway on April 21st, with Secretary Anderson as the first witness, to be followed by leaders of the various farm organizations to outline the problems of agriculture.

Following the opening statements, the committee then will hold hearings on the separate aspects of the problems, such as price supports and price relationships, revision and application of the parity formula to farm commodities, marketing and distribution research, improvement of nutrition and upgrading of the diet, international trade and expanded world consumption of agricultural products. Conservation of soil, forests, and other agricultural resources, and improvement in the standard of living in rural communities.

Mr. Hope said that it would be the most exhaustive study of agricultural conditions made by Congress in recent years and is intended to provide the committee with data on long range agricultural policies to be considered next session.

February Superphosphate Figures

Production of superphosphate of all kinds during February totaled 796,396 tons (figured on the basis of 10 per cent APA), according to the figures of the U. S. Bureau of Census. While this is lower than the 830,752 tons produced in January, the average daily production was approximately the same, and the total production was 12 per cent higher than February, 1946.

The amount shipped to mixers and used in mixed goods by the producing plants came to 863,110 tons, which reduced stocks on hand from 806,733 tons on January 31st to 751,165 tons on February 28th.

Production	Normal 18% APA	Concentrated 45% APA	Base Goods 18%APA
February, 1947.....	719,548	28,514	5,563
January, 1947.....	763,551	25,228	4,131
February, 1946.....	643,893	25,694	3,997
Shipments and used in Producing Plants			
February, 1947.....	784,283	27,644	9,717
January, 1947.....	752,657	29,012	8,236
February, 1946.....	730,262	27,815	10,257
Stocks on Hand			
February 28, 1947..	614,360	52,579	5,357
January 31, 1947...	669,899	50,929	9,511
February 28, 1946..	764,602	34,839	10,250

British Agriculture May Use Less Fertilizer

A SHIFT from wheat and other less profitable crops to livestock production by British farmers during the next five or six years will bring a decline in requirements for basic fertilizer chemicals such as nitrogen, potash, and phosphate rock, British fertilizer manufacturers believe.

England will import less of these chemicals as such but at the same time use of protein concentrates will increase as the country comes to depend more fully on outside sources for wheat and other grains, and swings to a greater production of meat, representatives of the British fertilizer industry pointed out during their recent inspection trip in this country.

Fertilizer consumption in the United Kingdom with the exception of potash increased steadily during the war but this apparently

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favorable situation must be discounted somewhat, Mr. D. J. Bird, president of the Fertilizer Manufacturers Association, Ltd., said.

He pointed out that during the war crop land acreage was increased 63 per cent while the manure output was sharply reduced and grain and protein concentrates containing more plant food than the pre-war fertilizer supply was almost completely halted due to shipping difficulties.

While the increased supply of imported fertilizer was an important factor which enabled the United Kingdom to double food production during the war, a changing pattern is now indicated, Mr. Bird said.

He added that at present the United Kingdom is using twice the amount of imported potash it did before the war. However, in pre-war years, farm yard manure supplied 50 per cent of the potash requirements. Increased livestock production will consequently reduce chemical fertilizer requirements.

Face 1947 Shortages

Farmers in the United Kingdom this year will face some small shortages of nitrogen and potash fertilizer materials, Mr. Bird declared, but added that it is the opinion of British fertilizer producers that the Government has called for a larger production of superphosphate than consumers will buy.

Severe cold weather on the European continent has slowed transportation of potash, he said, which will mean some shortness of supply in England. A wet summer last year and the severe winter has drained nitrogen from the soil. Thus, demands for nitrogen fertilizers are higher than was anticipated earlier, producing a shortage of the materials.

England is now getting some potash from German mines which are principally in the Russian zone of occupation, Mr. Bird said. Belgium and Dutch producers are exporting superphosphates to the American and British zones of Germany.

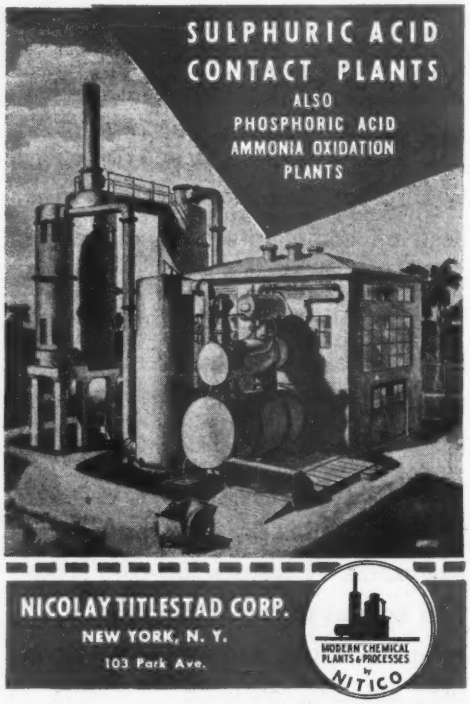
The severe winter will delay shipments of fertilizer materials from continental Europe to England, but movement of materials will begin in a short time from France, as soon as ice on the Rhine melts. At the same time the severe winter has delayed the planting season in England.

Any further increases in labor, bag or other costs will place British fertilizer makers in a serious position, it was emphasized. These higher costs cannot be recovered from consumers and there is some fear in the industry that if demands fall or prices increase, from 12 to 18 months will elapse before upward price adjustments can be obtained from the Government.

Hammond Bag Celebrates 25th Anniversary

Hammond Bag and Paper Company, Willsburg, W. Va., organized in April, 1922, is now celebrating its 25th year of service in the paper-shipping-sack industry. Originally manufacturing only pasted single-wall bags, Hammond now makes a wide variety of single and multi-wall types, both sewn and pasted, for shipping fertilizer, cement, chemicals, rock products, flour, potatoes, feed, and thousands of other items to almost every country in the world.

Founded by the late T. H. Hammond, the company has grown from 10 employees to 300, and from 40,000 square feet of plant floor space to 200,000. M. J. Davis, president, indicates that plans are currently under-



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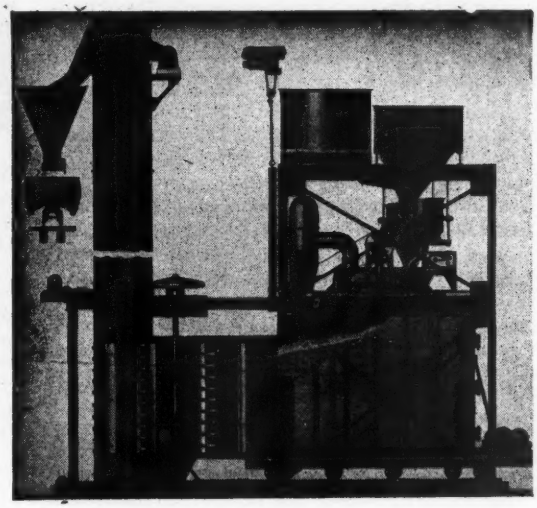

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way for still further expansion. Mr. Davis has served as an employee of the company continuously throughout its 25 years of activity.

The anniversary issue of the *Hammond Bagazine*, the company's plant publication, tells the story of Hammond expansion and progress over the past quarter-century and of its present highly cooperative organizational structure. On the *Bagazine's* back cover is a table showing an interesting comparison of labor, prices, and production conditions at Hammond "Then and Now."

World Corn Crop at Record Level

The world's corn crop in 1946–47, estimated at 5,410,000,000 bushels, is the largest on record, according to the U. S. Department of Agriculture's Office of Foreign Agricultural Relations. At this figure it exceeds the 1945–46 crop by 8 per cent, the 1944–45 crop by 2 per cent, and the 1935–39 average of 4,729,000,000 bushels by 13 per cent.

Outstanding is the record crop of 3,288,000,000 bushels in the United States, which country accounted for 60 per cent of the world's production. In fact, the large crop in the United States was the principal factor in the world's record out turn. This country's pre-war average production was 2,316,000,000 bushels. In Mexico, the second most important producer in North America, the crop also was above average.

Other than North America, Asia is the only continent with an estimated above average total, but the out turn is smaller than in the two preceding years. Out turns in Europe and the Soviet Union were still considerably below average. In Europe, the crop was even less than last year's small total, due mainly to drought in the Danube Basin. In South America and Africa, the total production is estimated to be larger than in 1945–46 but somwhat below the pre-war average.

In view of the record crop in the United States, a much larger quantity of corn will be available for export than last season when the quality of the crop was low, much of it having had a high moisture content. United States exports this season now are expected to exceed 100,000,000 bushels compared with the 25,000,000 bushels shipped from last season's crop. A large part of the export movement will go as military shipments for civilian use in the occupied zones of Europe and the Pacific.

Supplies available for export from Argentina, the other ranking exporter, will also be large this year. This year's Argentine crop is estimated at 300,000,000 bushels, more than twice the level of last season's small harvest of 141,000,000 bushels. With a crop of that size, the export surplus should exceed 200,000,000 bushels compared with exports of only 84,000,000 bushels for the season ended March 21, 1947 and the 1938–42 average of 44,000,000 bushels.

Although the utilization of corn as a substitute for wheat and rice is limited, the export supplies of corn in the United States and Argentina will tend to offset to some extent the inadequate supplies of bread grains available for shipment from the surplus producing countries this season, said the Department.

Corn Fertilization for Georgia

Inadequate fertilization and not enough plants to the acre are the principal causes of the low 10-bushels-per-acre corn yield on the four million acres devoted each year to that crop in Georgia, state Dr. L. C. Olson and Orien L. Brooks, of the Georgia Experiment Station.

Piedmont-Coastal Plain

Corn fertilizer experiments were conducted last year in the Coastal Plain and Piedmont of Georgia, on Norfolk sandy loam soil and Cecil and Durham sandy loam soils, respectively. With 7,600 plants per acre, profitable returns were obtained from applications of 300 to 400 pounds of a 4–8–8 fertilizer at planting, and side-dressings of 150 pounds nitrate of soda when the corn was six weeks old. Increasing the stand from 4,100 to 7,600 corn plants increased the yield 20 bushels per acre. "A population of about 7,000 plants

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per acre, obtained by spacing 21 inches apart in 3½-foot rows, is recommended," says Dr. Olson, who conducted these tests.

Mountain Area

Twelve additional bushels of corn to the acre were obtained where 30 pounds of nitrogen, 60 pounds of phosphate, and 60 pounds of potash were used on experiments conducted last year in the mountain section of north Georgia.

Mr. Brooks, agronomist at the Georgia Mountain Experiment Station, a branch of the Georgia Experiment Station, ran six tests in cooperation with farmers, using Holcomb's Prolific, one of the highest yielding varieties of corn for north Georgia. He applied fertilizers at 12 different rates on Hayesville clay loam, Hiawassee clay loam, and Fannin city loam soils.

"About 7,200 stalks per acre was the average plant population for these tests, which was obtained by spacing the plants 21 inches apart in 3½-foot rows," Mr. Brooks reports.

"It is interesting to note that as the rate of application of fertilizer was increased, the number of ears per acre, as well as the size of ears, increased."

Pasture Renovation Pays in Cooperative Experiments

Preliminary reports by the U. S. Department of Agriculture show substantial forage crop increases secured by renovating old established orchard grass and bluegrass sods of better-than-average production through surface tillage, fertilizing, and reseeding with good grass and legumes. These results obtained at the Agricultural Research Center, Beltsville, Md., check with similar results obtained by farmers and State Experiment Stations.

In the cooperative trials with Bureau of Dairy Industry just reported by R. E. Wagner of the Bureau of Plant Industry, Soils, and Agricultural Engineering, the renovation work was done in each of two season, 1945 and 1946, on three orchard grass pastures of 2½ acres each and three bluegrass pastures of 2 acres each. One field of each kind of grass was disked, fertilized, and seeded. The grass and legume seed mixture used included 8 pounds of bromegrass, 8 pounds of alfalfa, 3 pounds of red clover, and 2 pounds of Ladino clover per acre. An 0–14–14 fertilizer was applied with the bromegrass at 500 pounds an acre, while four other paddocks, two of orchard grass and two of bluegrass, received the same topdressing of fertilizers as the other plots, but received no disking or seeding treatments. In the second season seedings were made and fertilizer was applied on plots which had been disked in the fall of 1945, while all plots, as previously, received uniform fertilizer treatment.

As might be expected, the first season's results showed a slight margin of production for the untreated pasture plots over those which had been renovated, especially because of a plentiful moisture supply. Moreover, abnormally dry weather following the seeding of the renovated pastures delayed their recovery and growth. It remained for the second season's production to demonstrate the advantages of renovation.

In the 1946 season the bluegrass pastures renovated in 1945 showed increased dry matter yields of about 98 per cent over the pasture which was not renovated, or 6,734 pounds of dry matter per acre for the renovated area as compared with 3,405 pounds for the unrenovated plot. In the case of the orchard grass the plots which were renovated yielded 75.7 per cent higher than the unrenovated area, or 7,035 pounds and 4,004 pounds per acre respectively.

Sustained summer production marked the renovated pastures, which were far superior in this respect to the unrenovated pastures. Both quantity and quality of the forage produced were higher on the renovated pastures.

The pastures renovated in the second season made surprising gains over the check plots. The bluegrass pasture renovated in 1946 produced 6,140 pounds of dry matter per acre, or about 80 per cent more than the yield on the unrenovated pasture. The renovated orchard grass pasture yielded 5,139 pounds of dry matter per acre, or an increase of about 28 per cent.

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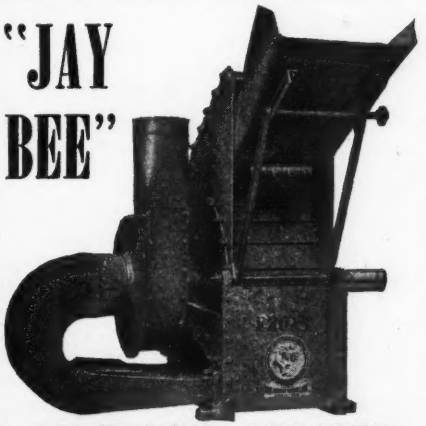

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FERTILIZER PRACTICES FOR PROFITABLE TOBACCO

(Continued from page 00)

side-dresser just ahead of the cultivator 20 days after transplanting.

A comparison of results for the four replicate plots each, plants spaced 24 inches and 20 inches apart in the rows, would indicate that for all normal fertilizer applications the 20-inch spacing in four-foot rows is about right notwithstanding the fact that the 20-inch spacing produces slightly more dead, perished type of cured leaf from the lower primings than the wider spacing does (particularly when heavily fertilized). The $35 per acre increased average value from the 20-inch spacing would seem significant.

By studying the four replicate plot average values for each of the fertilizer treatments when mixed throughly in the furrow before listing as compared with the same fertilizer when not mixed before listing, it can be seen how much a farmer might lose by not mixing his fertilizer in the row furrow before listing, (in the absence of a fertilizer distributor which would apply this fertilizer in bands to the sides of the plant roots). When using heavy applications of fertilizer such as 1,500 pounds per acre, this loss ran as high as $47 per acre for two years, and the average of returns for all 28 plots when the fertilizer was mixed was $26 per acre more than for the 28 plots not mixed.

Provided the fertilizer is thoroughly mixed before listing, the 1,500-pound applications are most profitable, but if the 1,500-pound applications are not mixed then they are much less profitable than the 1,200-pound rates or the 900-pound rates with side-dressing added.

Comparison of the three different side-dressings used would indicate that those containing 2½ pounds borax per acre produced average acre increases of about $90 to $100 over the 900-pound fertilizer applications without a side-dresser while the commercial 5–5–20 (which probably contained no borax) gave average increases of only about $75 per acre, or $15 to $25 less gain. (The difference in nitrogen content could have accounted for some of this difference in values.) When used following 1,200 pounds per acre fertilizer application and with 20-inch spacing, the side-dressing still gave a $28 per acre increased value. This would indicate that side-dressings containing nitrogen, potash (practically free of chlorine, and in the approximate proportion of two units of potash for each unit of nitrogen), and a small amount of boron (2½ pounds of borax per acre) pay handsome dividends where tobacco has received original fertilizer applications of only 900 to 1,100 pounds per acre and smaller profits where 1,200 pounds and more per acre of fertilizer were used.

The most profitable treatment in this experiment was the 1,200-pound application of 3–9–6 when mixed in the furrow before listing, plants spaced 20 inches in rows, and 100 pounds of 8–0–16 plus borax side-dressing used. This combination gave two-year average yields of 1,563 pounds with average values of $819 acre.

The replants needed per acre were, on the average, gproximately double where the fertilizer was not mixed in the soil before listing.

Summary and Conclusions

On typical bright tobacco soils fertilizer applications account for approximately 75 per cent of the tobacco yields and acre values.

Average farm fertilizer practices produce, at present tobacco prices, average income values fully $100 to $150 per acre less than improved practices would give.

Twelve hundred to 1,500 pounds of 3–9–6 fertilizer per acre produce tobacco yields and values much larger than 900 pounds of fertilizer, provided the heavy rates of fertilizer are thoroughly mixed in the furrow before listing the land.

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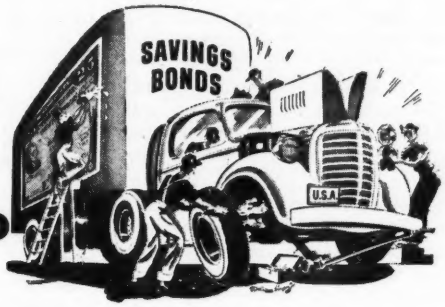

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acre when not mixed are less profitable than 1,200 pounds, or 900 pounds plus 100 pounds of side-dresser. For normal applications of fertilizer the 20-inch spacing in 4-foot rows seems about right and is recommended.

Replants needed can be reduced by one-half by mixing the fertilizer in the furrow before listing previous to transplanting, or by using a machine to place the fertilizer in bands to the sides of the plant roots. A combination machine of this type designed and built by the writer in 1946 gave excellent results. The fertilizer distributor and row-lister were built around the chassis of an ordinary stalk cutter and resulted in a very low-cost, dual-purpose machine which saved approximately 75 per cent of the labor and team costs usually required to do these jobs. It produced results in tobacco yields and acre values never before equaled on this Station.

Two and one-half pounds of borax per acre applied either in the original fertilizer or in a side-dresser 20 days after planting give average increased acre values of $25 to $30 and are recommended.

Pea Yields Increased by Added Nitrogen

Increases in yields of peas ranging from 300 to 700 pounds of shelled peas to the acre were obtained from 60 pounds of extra nitrogen applied to two different soils, in tests carried on by scientists at the Experiment Station at Geneva, N. Y.

The tests were located in areas where peas frequently show the yellow color and stunted growth associated with a lack of nitrogen or calcium, and both soils were quite acid. One field received 550 pounds of a 4–12–4 fertilizer and the other 450 pounds of a 5–10–5 mixture. In addition, both fields were given extra nitrogen and limestone or gypsum, but no appreciable response was obtained from the liming materials. Regardless of the source of the extra nitrogen, however, substantial and significant gains in yield of shelled peas were realized.

"In these experiments, the recommended fertilizer treatments for peas for these two soils gave from 750 to 1,000 pounds of shelled peas to the acre over the unfertilized plots," says Doctor M. T. Vittum, soils specialist, in commenting on the Station tests. "By adding 60 pounds of nitrogen in the form of ammonium sulphate or cyanamid, an additional 700 pounds of shelled peas were obtained on one soil and 300 pounds on the other. The source of the nitrogen made little difference.

"The extra nitrogen not only increased yields on these acid soils, but it also improved the quality as shown by lower tenderometer readings. Ammonium sulphate was more effective in improving quality than cyanamid in our tests."

The extra nitrogen can either be broadcast before plowing and plowed under or broadcast after plowing and disked in, it is explained. Ammonium sulphate or cyanamid at 300 pounds to the acre or ammonium nitrate at 200 pounds will supply 60 pounds of actual nitrogen.

Cotton Defoliation

Dr. W. Hardy Tharp of the Cotton Division of the Bureau of Plant Industry will direct a series of cotton defoliation experiments at the Arkansas Agricultural Experiment Station during this year's harvesting season. A grant of funds from the Agricultural Chemicals Division of the American Cyanamid Company is making this project possible.

With cotton defoliation rapidly becoming a standard recommendation among Experiment Stations and Growers, the need for further experiments has become apparent to determine if there are any significant differences among cotton varieties relative to the rate of application of "Aero Defoliant" Chemical Dust for successful defoliation. Factors which condition the fall of leaves in the cotton plant will also be studied, including the effects of environment and varietal differences.

The grant to the college provides for a fellowship in the Department of Agronomy to assist with the study, and the actual work is to be carried on at the Main Experiment Station in Fayetteville, the Cotton Branch Experiment Station in Marianna and the Cotton Branch Substation in Clarkdale.

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Monarch Mfg. Works, Inc., Philadelphia, Pa.
Utility Works, The, East Point, Ga.

Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City.... 4
American Limestone Co., Knoxville, Tenn.....20
American Potash and Chemical Corp., New York City.....17
Armour Fertilizer Works, Atlanta, Ga.....23
Ashcraft-Wilkinson Co., Atlanta, Ga.....25
Bagpak, Inc., New York City.....—
Baker & Bro., H. J., New York City....Front Cover
Bemis Bro. Bag Co., St. Louis, Mo. 21
Bradley Pulverizer Co., Allentown, Pa 29
Bradley & Baker, New York City.....14
Chase Bag Co., Chicago, Ill..... 6
Chemical Construction Corp., New York City.....25
Commercial Solvents Corp., Dixie Chemical Div., New York City .....—
Du Pont de Nemours & Co., E. I., Wilmington, Del.. 5
Fulton Bag & Cotton Mills, Atlanta, Ga.....26
Gascoyne & Co., Inc., Baltimore, Md.....34
Hammond Bag & Paper Co, Wellsburg, W. Va.,....—
Hayward Company, The, New York City.....34
Hough Co., The Frank G., Libertyville, Ill.....—
Huber Co., L. W., New York City.....—
International Minerals & Chemical Corporation, Chicago, Ill..... Back Cover
Jaite Company, The, Jaite, Ohio.....—
Keim, Samuel D., Philadelphia, Pa.....33
Link-Belt Company, Chicago, Ill.....25
McIver & Son, Alex. M., Charleston, S. C.....18
Mente & Co., Inc., New Orleans, La.....—
Monarch Mfg. Works, Inc., Philadelphia, Pa.....34
Potash Co. of America, New York City....3rd Cover
Raymond Bag Co., Middletown, Ohio.....—
Ruhm, H. D., Columbia, Tenn.....34
Sackett & Sons Co., The A. J., Baltimore, Md.....—
Schmaltz, Jos. H., Chicago, Ill.....34
Schmutz Mfg. Co., Louisville, Ky.....—
Sedberry, Inc., J. B., Franklin, Tenn.....27
Shuey & Company, Inc., Savannah, Ga.....34
Spencer Chemical Co., Kansas City, Mo..... 3
Stedman's Foundry and Machine Works, Aurora, Ind.....28
St. Regis Paper Co., New York City.....19
Sturtevant Mill Co., Boston, Mass.....23
Titlestad Corporation, Nicolay, New York City....22
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.....27
United States Potash Co., New York City...2nd Cover
Utility Works, The, East Point, Ga.....—
Virginia-Carolina Chemical Corp., Richmond, Va....27
Wiley & Company, Inc., Baltimore, Md.....34
Woodward & Dickerson, Inc., Philadelphia, Pa.....24

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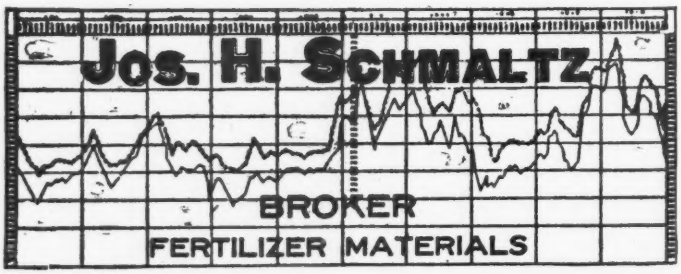

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